Remarks

In view of the above amendments and the following remarks, reconsideration of the outstanding office action is respectfully requested.

This submission is accompanied by a Request for Continued Examination, a petition for extension of time, and an information disclosure statement. Because the Notice of Appeal was entered on June 13, 2007, this submission is timely. All fees should be withdrawn from Deposit Account 14-1138.

Claim 1 has been amended to recite higher stringency requirements (i.e., structural requirements of the encoded PolC subunit b based on hybridization capability of the encoding DNA molecule) as well as functional requirements of the encoded PolC subunit ("has activity as a DNA polymerase"). The latter limitation finds descriptive support in the background of the invention at page 2, line 18 to page 3, line 31.

Claims 10 and 11 have been cancelled.

Claims 1, 2, 5-9, and 12-21 are pending. Claims 17-21 stand allowed.

The rejection of claims 1, 2, and 5-16 under 35 U.S.C. §112 (first paragraph), as lacking written descriptive support, is respectfully traversed.

The U.S. Patent and Trademark Office ("PTO") maintains its position that the single species disclosed as SEQ ID NO: 184 (*Bacillus stearothermophilus* PolC polymerase) does not provide descriptive support for the genus as claimed. Applicants respectfully disagree.

Given the recitation of high stringency conditions in claim 1 (hybridization and wash conditions of 5X sodium citrate buffer and at a temperature of 65°C), persons of skill in the art would expect hybridizing nucleic acids to be structurally similar to the nucleic acid sequence of SEQ ID NO: 183, and that the encoded proteins would be structurally and functionally similar. *See EnzoBiochem Inc. v. Gen-Probe Inc.*, 296 F.3d 1316, 1327, 63 USPQ2d 1609, 1615 (citing U.S. Patent and Trademark Office "Synopsis of Application of Written Description Guidelines" with approval). Given this rational expectation, persons of skill in the art would also expect related organisms (i.e., from bacterial genus *Bacillus* or, now, *Geobacillus*) to share functional and structural similarities, including similarities in the structure and function of individual genes and the encoded proteins.

The reasonableness of that expectation is confirmed by applicants' August 24, 2006, submission (Exhibits 1-3 attached thereto), which demonstrated relatedness between

the *B. stearothermophilus polC* and PolC polymerase of SEQ ID NOS: 183 and 184, and the *Geobacillus kaustophilus polC* and PolC polymerase. As one of ordinary skill in the art would have expected, species of PolC polymerase from thermophilic organisms that belong to the biological classification *Bacillus* or *Geobacillus* clearly share similar structure and, therefore, function.

Given the above facts, applicants respectfully submit that the present application provides written descriptive support for the claimed subject matter. Therefore, the rejection of claims 1, 2, and 5-16 for lack of written description should be withdrawn.

The rejection of claims 1, 2, and 5-16 under 35 U.S.C. §112 (first paragraph) for lack of enablement is respectfully traversed.

It is the position of the PTO that the specification does not provide sufficient guidance for making and using other PolC polymerases within the scope of the claims. Applicants respectfully disagree.

Because the application adequately describes the presently claimed genus, persons of skill in the art would be fully able to obtain other polynucleotides encoding other PolC polymerases within the claimed genus, express and recover the encoded polymerase, and allow recovered polymerase to assemble with clamp and clamp loader complexes in the manner described in the specification.

The present application provides the nucleotide sequences of *Bacillus* (now *Geobacillus*) *stearothermophilus polC* (e.g., SEQ ID NO: 183) and its encoded PolC polymerase. The present application also describes how one of ordinary skill can isolate homologs of the disclosed sequence (*see* page 41, line 9 to page 42, line 29), express the PolC subunit encoded by such homologous *polC* sequences (*see* Example 18, expressing *A. aeolicus* alpha subunit), and test the encoded polymerase for Pol III assembly competence (*see* Example 25, testing *A. aeolicus* polymerase assembly with clamp loader) and for polymerase activity (*see* Examples 26 and 30, testing *A. aeolicus* polymerase activity). Thus, one of ordinary skill in the art would have been fully able to make and use DNA molecules and their encoded proteins within the scope of the presently claimed invention.

As noted in applicants' prior submission, method 3 for homolog identification, described at page 42, is precisely the approach used to identify the *polC* homolog shown in Exhibit 1 to applicants' prior submission. For this reason, it should be apparent that the present application fully enables the production and use of other species of *Bacillus or Bacillus (*now *Geobacillus*) *stearothermophilus polC* homologs.

In view of all of the foregoing, applicants submit that the rejection of claims 1, 2, and 5-16 for lack of enablement is improper and should be withdrawn.

In view of all of the foregoing, applicant submits that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

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